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Radium in Cancer of the Prostate—A Report of 217 Cases. Herman C. Bumpus, Jr., M. D., Mayo Clinic, Rochester, Minn. *J. A. M. A., Vol. 78, p. 1374, May 6, 1922.*

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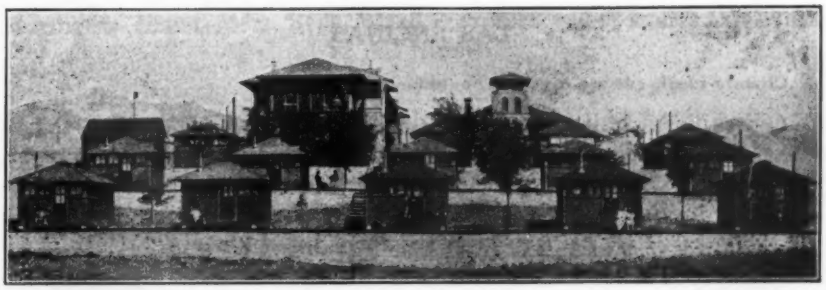

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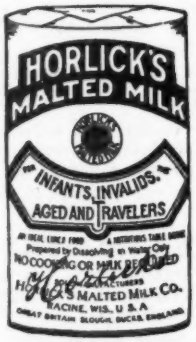

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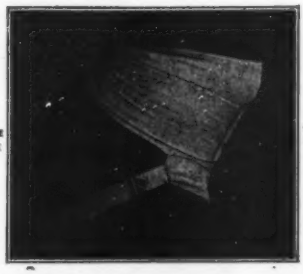

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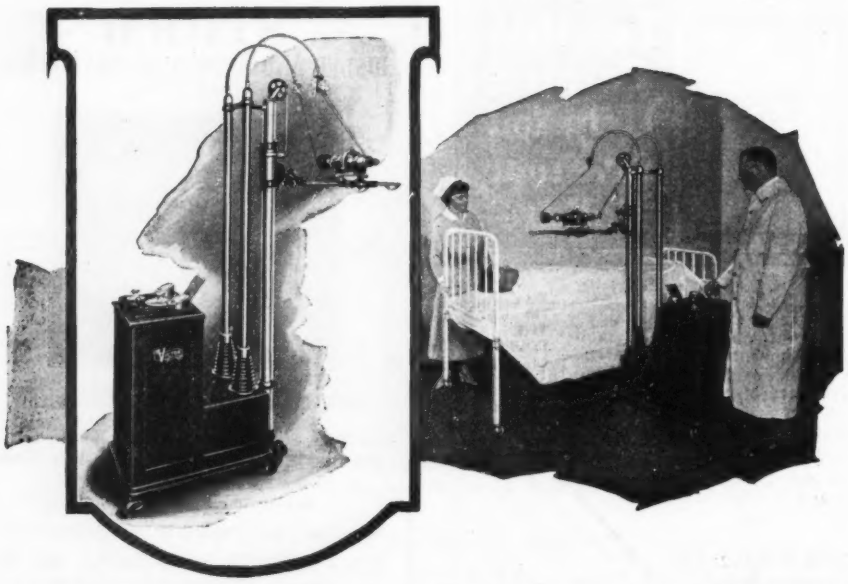

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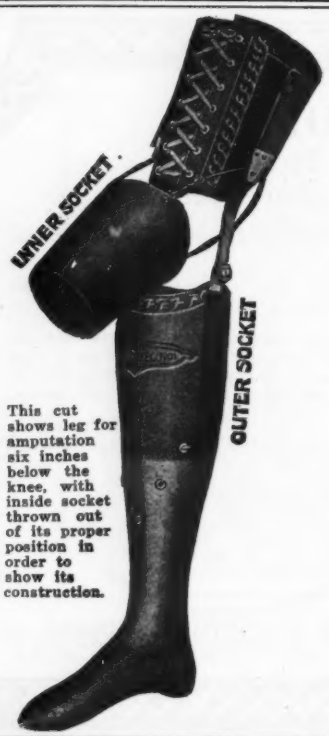

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MENTAL HYGIENE IN ARIZONA*

THOMAS H. HAINES, M. D., Director of the Arizona Mental Hygiene Survey, National Committee for Mental Hygiene, New York City.

The Arizona State Medical Association helped bring an opportunity to the National Committee for Mental Hygiene to serve the people of Arizona in the survey which we have now completed. The National Committee for Mental Hygiene returns the favor by bringing to the physicians of Arizona a special opportunity to serve the people of this state.

Many of your members were active in securing for the National Committee for Mental Hygiene the invitation of Governor Campbell and the invitation of the Legislature in April, 1921, by which we were asked to "conduct a survey of all state, county and city institutions, as well as in the public schools of the state." This association also backed up these invitations by substantial offers of moral support. We have had cordial cooperation from every member of the association upon whom we have called. We know, therefore, that you want to know what we have discovered. We know that you earnestly wish to canvass the situation and see what can be done for the mental health of the people of Arizona. We cannot make you a formal report at this time. This report must be in the making for the next two months, but we can promise that before the summer is over the manuscript will be available. Way now seems to be provided for the publication of 2500 or 3000 copies.

We can report that we have more or less intimate personal histories of upwards of ten thousand of your citizens. We have examined upwards of nine thousand children in schools, mostly public, but some private, and some federal.

We have thus comprised within the survey upwards of 2700 children in Maricopa county, 2200 in Cochise county, 500 in Tucson, 600 in Miami and 1500 in six other counties. These latter are mostly rural schools.

To give an idea of the kind of result obtained in these school surveys we find among 2771 children in Maricopa county, comprising three schools in the city of Phoenix, the following mental diagnoses:

	Number	%
Superior	186	56
Normal	1553	56
Dull	752	28
Borderline	131	5
Mentally defective	79	2
Psychopathic personalities	68	2
Psychoneurotic	1	....
Epileptic	1	....
	2771	

**Read before the Arizona State Medical Association at Prescott, May 14-16, 1922.*

Similarly the 2287 children in Cochise county yield the following diagnoses:

	Number	%
Superior	125	6
Normal	1507	66
Dull	474	21
Borderline	55	3
Mentally defective	38	1
Psychopathic personalities	86	3
Psychoneurotic	1	....
Epileptic	1	....
	2287	

It should be borne in mind that the survey in Cochise county comprised practically all of the school children, including the High School in the city of Bisbee, whereas, the larger part of the children in Maricopa county were in rural schools, and very few in high schools. This analysis of the two counties will be borne out in general terms by the analysis in general terms of the rural schools of the state.

It is evident that some of the most serious educational problems in Arizona have to do with the Mexican and the Indian. We have made diagnoses of thousands of Mexican children in the public schools. To enable us to come at the problem, however, of the education of the Mexican and of the Indian directly, we have had the cordial co-operation of the Phoenix Indian School, of St. John's Mission, in the desert near Gila Crossing, and the Indian Training School near Tucson. Of the 1030 children found in attendance at the two schools, first mentioned, we made the following diagnoses:

	Number	%
Normal	383	37
Dull	478	47
Borderline	71	7
Mentally defective	66	6
Psychopathic personalities	27	3
Psychoneurotic	1	....
Epileptic	3	....
Mental disorders	1	....
	1030	

The problems of examination of the Spanish-speaking Mexican and of the Indian who has not learned sufficient English to communicate in that language are special ones for both the psychologist and the psychiatrist. These children, however, have been in school for the most part a sufficient length of time to talk fairly well, and where necessary we used as interpreters children who commanded both languages involved. We believe that we have arrived at reasonably true views as to the mental equipment of each one of these children. There is a large increase in number of dullards as well as the various degrees of defect and disorder among these children as compared with white children.

Similar diagnoses have been made of the boys and girls of the Arizona State Industrial School, and of the men and women at the State Prison. An analysis of the conditions found at the Industrial School will suffice to illustrate the mental conditions underlying or accompanying recalcitrant youth. Of the 118 boys and girls present at the time of the survey, we found the following mental diagnoses:

	Number	%
Normal	27	23
Dull	34	29
Mentally defective	9	8
Borderline	9	8
Psychopathic personalities	35	30
Psychoneurotics	3	2
Epileptics	1	.84
	118	

The relatively small percentage of mental defectives, less than twenty per cent, amongst these children, will be somewhat of a surprise to some who have emphasized the importance of mental deficiency in explaining juvenile delinquency. An especially large number of dullards, particularly among boys, is found, but there are really well-equipped boys and girls in this population. The modes in the distribution shown above are of psychopathic presonalities and dullards. Psychopathic persons cannot be called mentally defective in intelligence with which psychopathic persons are afflicted.

Theirs is a malconstruction of that part of mentality which we cail character. Character is the organization of the personality. This is a defect in the organization of the person. When we consider that character consists largely in the organization which is acquired in the processes of socialization, we understand that this so-called psychopathic personality is in large measure an acquired defect. It exists either because education has proceeded wrongly or because education has not had the opportunity to work its effect upon these individuals. This being true, we see that the defects of these persons are correctible defects, and that these children are most properly placed in a sort of superior school, a special school definitely organized for the purpose of ministering to these unfortunate individuals who have failed so far of the proper socialization. The business of this school is primarily socialization. The business of every school is primarily to make citizens, but these delinquent adolescents are the most knotty of all their problems which the social workers, the courts, and the schools have sorted out for this school.

That the school should be burdened with the feebleminded is, however, an example of one of the greatest errors in our social thinking. The feebleminded do not belong there. The same kind of problem exists, or should exist, in the state prison. The rehabilitation of these men, the reconstruction of their characters so they cease to be trouble makers, and so they are placed in constructive cooperation with other men in civil life is the prime reason for the existence of the penitentiary. Happily, work, occupation, is the best means for this therapeutic process. When these able-bodied men are given the proper opportunities for working themselves back to normal relationships in the community, the state will be put at much less expense for the maintenance of this institution. There is no real reason, based on the science of criminology as aided by medicine and psychology, why the state should be at any expense for the maintenance of adult delinquents.

The above remarks hold equally with regard to delinquents in county and city jails. In these institutions in Arizona there are continuously more than 500 able-bodied men. They are kept while waiting trial and while serving sentences in these jails under conditions least desirable from the mental hygiene point of view. The idleness, the confinement, the social relations and sometimes the filth in which these men are kept all tend to contribute to the degeneration rather than to the upbuilding of character. Employment in the open air should somehow be obtained for every person whom society finds it necessary to confine on account of delinquency or suspected delinquency.

In addition to the statistical data which we shall be able to put in your hands in the report as outlined above, we shall have some close-up studies of some of the least desirable families in Arizona. Miss Sessions has made some careful family studies of human parasites who have fed long at the public expense in this state. These family histories will suggest the high desirability and importance of control and management of some of these people who are so ill qualified to manage themselves with fairness to the rest of society. Some of them are delinquents, some are dependents, some are feebleminded, and some are psychopathic. In every case, however, the mental condition will be shown to be the fundamental cause of the dependency or of the delinquency, and this cause will be shown to be more or less hereditary in character, so that the family as such is to be classed amongst the undesirable. the unfit, and, therefore, suitable for elimination. It is a part of wisdom to work out means of managing such families, not only for the present minimizing of the expense to which they put the public, but to minimize and ultimately eliminate the expenses for such stocks in the state. In other words, community control of

the breeding of the unfit is the clearly indicated goal to which Arizona should work in the future. This is the first and prime result of such studies of your people. Such studies are affording to you important material upon which to base your educational campaigns and your legislative action.

I realize that public health questions have not come very intimately into the every-day working life of the average practitioner. Yet the community is very properly coming to look to the doctor for guidance in these matters. His studies of biology and his intimate relations with family life, particularly at births and deaths and the illnesses incident to these occurrences, put him in a position to appraise the importance of eugenics in its bearing upon community welfare. They know he is, therefore, in a position to lead others, so to shape community action as to bring about a better state of affairs.

In view of the strategical position, therefore, of the medical man in the community in reference to these bearings of biology upon community life, I respectfully ask each one of you to seriously consider the facts brought together in the report of the Arizona Mental Hygiene Survey. I also ask of each of you to try to find opportunity in his community to spread abroad these facts and to interest the people in making plans for better community organizations in Arizona. If each physician in this state would thus make it his avocation for the next six months to study the facts and to discuss the plans and to arouse intelligent discussion of the same, there can be no question but that Arizona would as the result of action at the next session of the Legislature, take a very forward position among the states in regard to her management of mental health problems.

The story is an old one as to how easy it is to get appropriations for improving live stock, for improving anything which makes for the material wealth of the community through better agricultural methods, and how difficult it is to get anything done to improve the human stock. But this is simply because the community has not stopped and considered the importance of these matters.

It is evident to anyone who will stop and think that the first asset of any community is constituted by the people who compose the community itself. It is not its material resources, not the fertility of its soil or the hidden mineral wealth, or the superb character of the climate that makes a people great. It is the kind of human stock which lives in that region that makes the community. It is equally evident that the mentality of any stock is the first index of its value, individually and collectively.

It is, therefore, vastly more essential to the community to preserve and improve the mental health of its people than it is to keep pure the long-staple cotton of the region, or to secure more water for more of the fertile land in the region. We recognize the basal character of both of these assets as regards the prosperity of the community. Even with this recognition, however, there is nothing to retract in the above comparison. The mental health of the people is basal to these fundamental factors.

1. SPECIAL SCHOOLS.

The report of this survey will contain various recommendations which seem to us desirable for Arizona to follow out in order to obtain these most important ends. It is important to arrange for the special education of the dullard and of the defective in the public schools. There is at present much energy wasted in attempting to teach ill-organized minds matters which they are incapable of understanding or utilizing. At present much energy is wasted in our schools because of illogical classification of the children in the schools. Far better results can be attained with less expenditure of effort when the dullards and the mentally defective are segregated and are taught in the manner in which nature seems to have designed them to be instructed.

The primary end in education is the organization of character. The fundamental means thereto consists in the coordination of movements. By coordination effecting constructive efforts the human mechanism learns how to think and to accomplish ends. Some of these dull minds can learn only through the use of their hands. The time expended upon purely literary education or attempts thereto is worse than wasted both for the teacher and the taught; worse than wasted because it is perverting the tendency to activity in the mind of the would-be pupil. He learns to waste his time and forms bad habits instead of good ones, because there is nothing afforded in the curriculum of the school in which he can be naturally interested, and we know well that if interest cannot be natural, it cannot be.

2. STATE SCHOOL AND COLONY FOR MENTAL DEFECTIVES.

Some of these peculiarly limited individuals cannot be properly treated in a public day school. Others have not proper homes in which to be maintained in order that they may attend a properly organized day school. It is necessary, therefore, to have a public institution in which proper training can be afforded for mental defectives of educable age. Such an institution need not be an expensive building or group of buildings. In your climate in southern Arizona shelter is no great desideratum and the educational facilities demanded by these people being primarily only those requisite for training in the arts of the household and of the farm, it is readily seen that they may be kept and treated at much less expense than some other classes of pupils and patients.

3. STATE CLINICS.

The state needs clinical facilities for the diagnoses of the mental conditions underlying social problems, whether these problems occur in schools, in associated charities, in other philanthropic agencies of like nature, or in connection with probation officers and courts. It is of primary importance to know of the mental condition of the case in hand. It is as important for the court to know from the psychological point of view the causes leading up to the offense before undertaking to administer a sentence designed to recover the delinquent as it is important for the physician to diagnose the disorder before he administers treatment.

4. STATE MENTAL HYGIENE BOARD.

It is also important to have some supervisory agency in the state which would be able to exercise control over mentally defective and mentally diseased persons outside of institutions. The state hospital for the insane is frequently able to parole patients partly recovered. It would be able to parole more patients with safety to themselves and to the community if there were a properly organized bureau able to supervise the life of the patient in the private home to which he was paroled. Likewise feebleminded persons could be paroled from state institutions for their treatment and care under the supervision of the same bureau, when it would be utterly impossible if there were not such social workers to arrange for the parole and supervise the patient during parole.

5. CONTROL OF MENTAL DEFECTIVES IN THE COUNTIES.

In the same way many mentally defective persons could be managed in the community quite safely to themselves and to the community without ever going to a special institution for treatment or for custody, if there were such a properly organized parole bureau for mental cases. In other words, a department of public mental health looms large on the horizon. This department would properly have charge of the State Hospital and all its work. In such cases it would have a psychopathic service in connection with this hospital. It would have charge, partly through its state hospital staff, of clinics for out patients held both at the institution and at stated times in other parts of the state. It would be prepared to render service to courts

and possibly to schools where clinical examinations seem desirable and to aid in understanding the mental conditions involved in various problems as they arise. It would have charge of the state institution for mental defectives. This would comprise administration of epileptics. It would very properly be put in a position of collaboration with the parole agency of the State Prison and the Industrial School.

What form such administration of mental methods in Arizona should best take at the present time, I do not believe anyone is prepared to say in detail. That there should be such unified mental health administration, that this administration is most fundamental to the health of the community and that it will pay a good return in increased prosperity in the community, is beyond the peradventure of a doubt.

That such administration must be organized as good business is equally clear. It should be the people's business. This is a representative government. But the people's business is well managed at the University of Arizona by a non-partisan Board of Regents. The Arizona Mental Hygiene Board should be non-partisan and should employ experts to do their work. These experts should be secured on account of their expertness without regard to residence or political views. They should be secure in tenure while they continue to improve the service they engage in.

To you gentlemen, most intimately acquainted with the health conditions in the state, I earnestly commend the consideration of these problems, that have to do with that part of the person found above the collar. You are in a position to help your communities and your state to intelligently discuss these matters, to help them form plans to bring to the State Legislature, and to help the Legislature to effectuate such plans.

INJURIES TO THE FACE AND JAWS*

W. T. COUGHLIN, M. D., F. A. C. S., Director of the Department of Surgery Saint Louis University, Saint Louis, Mo.

It is perhaps true that in order successfully to treat injuries of the face and jaws a certain amount of special knowledge is necessary. This special knowledge is something that may be easily acquired by any general surgeon who wishes to give it proper study.

For the past few years public attention has been more particularly called to these injuries and to the skill exhibited by those who were engaged in their repair. This work appeals to the lay imagination and for that reason prominence is given by the lay press to the success obtained in this branch of surgery.

The results can be seen, each case becomes an advertisement; perhaps that is one reason why the general practitioner stands in dread of such cases and even the ordinary surgeon much prefers other kinds of work. It seems to me, however, that the real reasons why there are so few who adopt this work as a hobby are because it requires a certain amount of artistic talent, a very great deal of painstaking attention to seeming trifles from start to finish, a very thorough knowledge of general surgery and, besides all these, the financial compensation is usually inversely proportional to the amount of ability and work required.

The surgeon is confronted with an injury to the face. If he would obtain the best results he must visualize

*Read before the meeting of the Medical and Surgical Association of the Southwest in conjunction with the Pacific Coast Roentgen Ray Society, at Phoenix, Arizona, December, 1921.

immediately the ultimate result. Every act that he performs from the removal of the smallest shred of tissue to the tying of the last of the smallest sutures must bear upon that result. And in direct proportion to his ability to do this and at the same time observe all of the fundamental principles of surgery will his results be good.

I have been asked whether one should devote his whole time to this kind of work. That depends altogether on the individual. There are individuals who are utterly unable to do more than one thing well and there are others who do better work when they have more variety. I think that this kind of work should be practiced as a sort of "hobby" and by someone who is considered by his fellows a good general surgeon. Whether he practices general surgery or not is a matter of his own choice. It is almost certain that those who are not well qualified will not be permanently successful, so that this is a sort of self-limited specialty.

In regard to the variety of the wound, whether it be incised or lacerated, there are certain differences in first treatment. Incised wounds of the face anywhere above the level of the lower jaw, whether they go quite into the mouth or nose or not, should be immediately repaired, and if below this level, but not opening the oral cavity, they should also be repaired at once. Therefore, all incised wounds may be closed without drainage except those which enter the mouth cavity below the level of the lower gum.

Wounds that cut through the salivary ducts are prone to be followed by fistula formation. To avoid such an unpleasant sequel all that is necessary is to make a passageway from the proximal cut end of the duct into the oral cavity and keep this passage open. The superficial tissues can then be closed at once and usually they heal quickly. The new formed channel should be large enough so that the saliva discharging from the cut duct can at once flow into the mouth. A little flap of mucous membrane can be drawn into the channel and its tip fastened to the proximal cut end of the duct. This flap will soon form itself into a tube which will remain permanently patulous.

If the wound above the lower gum level be lacerated or contused it is better practice to close partially; that is, to leave drainage space. Rubber strips make the best drainage material. It is rarely necessary to excise face wounds, and if excision is ever practiced only a very thin surface layer should be moved.

Wounds which open the air sinuses are likely to cause complications. If such a wound is at once closed tightly some exudate or blood is likely to collect in the sinus; soon suppuration ensues and the result may be serious. A good rhinologist as a co-laborer in such a case is a great help. He can perhaps keep passages open and sinus cavities cleaned and primary healing is the rule unless the wound is grossly infected from the first. If the infection is certainly established, as evidenced by redness, swelling, etc., by no means should any attempt be made to close such a wound, whether excision is practiced or not. Any wound involving any of the air sinuses may be complicated by cellular emphysema. It may spread widely. It can be prevented either by leaving the overlying wound widely open or by closing the opening from the sinus into the nose by packing. It is only likely to arise within the first forty-eight (48) hours, unless the patient sneeze or cough or blow the nose a great deal when it may happen as late as the second week (perhaps later). Such actions should be prevented as far as possible.

As has been stated, wounds opening the oral cavity below the level of the gums of the lower jaw should not be at once closed tightly. Many say close partially allowing for drainage. All of the really dangerous cases I have had and all the deaths were in those who had been "closed with drainage." Therefore, I leave all such wounds wide open and see

that every recess and cavity in such a wound is loosely filled with iodoform gauze. None will die of infection and none will have secondary bleeding, although some may get well with a fistula.

Any wound of face or neck that opens into the alimentary tract must be regarded as more serious on that account. Sometimes the mouth of the patient is altogether filthy and at all times it is regarded as potentially septic. Pyorrhea and caries are most astonishingly frequent and not confined alone to the lower classes. A dirty wound in the mouth soon gives a foul smell to the breath. Any patient may have a foul breath from causes other than putrefaction in a wound, but the stench from a putrefied wound is unmistakable and always a sign of lack of attention.

The mouth and pharynx in patients who cannot eat in the ordinary way can be kept clean only by brush, wash, and gargle. The cleansing wash or gargle may be any non-irritating antiseptic. The important thing is not what to use, but how and when to use it.. The teeth and gums are cleansed three times a day at first, and by a trained attendant, later once or twice daily and the patient may do it himself. The mouth is washed once every hour while awake and for the first few days the patient is awakened every two or three hours at night. After he has washed his mouth he gargles with the same solution. I still use Dakin's solution full strength for the first few days in all cases where oral or pharyngeal mucosa has been wounded. When it begins to irritate it is diluted half, sometimes with water, sometimes with potassium permanganate, 1 to 2000 or 1 to 4000. Dakin's solution dissolves catgut or silk and may be responsible for bleeding, therefore, when arteries have been ligatured in the wound it should not be used during the first forty-eight hours; Dobell's solution will do quite as well. When the patient is physically able, he himself is made responsible for the condition of his mouth. There *must not* be any stench after the patient has been in the hospital twenty-four hours. It is not only on the wound itself that a clean mouth exerts a beneficial influence, but on the general condition of the patient, mental as well as physical.

Foreign bodies should always be sought for if the wounds are deep, whether the wounds are caused by missiles or not. I have removed part of a knife blade from an incised wound. The x-ray may not always show the foreign body.

If a fracture of the jaw complicates a wound of the face, there ought to be no delay in treating the fracture. I have often had much difficulty in getting certain of my colleagues to view this matter in the same light as I do, but I think it is so obvious that a displaced and broken bone should be replaced and retained in position at once that I cannot discuss the matter. It is not so important whether we shall immobilize in open or in closed bite as it is that we shall reduce and immobilize at once. In fractures of bones not likely to be drawn out of position by muscle pull or scar formation or in those in which malunion or vicious union will not materially interfere with function, this is not of great moment, but in fractures of the jaws it is most important.

There is always the question of what to do with loose pieces of bone and loosened teeth. If pieces of bone are in the wound and not sticking out into the mouth or not entirely free, they had better not be removed at once. Many times have I observed fractures which came diagnosed total loss of substance of the lower jaw for distances up to 2 cm. get well without bone graft of any kind, the repair across the gap being made by new bone formed from or along the periosteum. Periosteum *thus forms new bone*, but only when it is irritated or inflamed. The small fragments left in situ provoke irritation. The site where they lie should be kept carefully drained, otherwise os-

teomyelitis will ensue with dire consequences.

Teeth which cross a line of fracture or which are loose at the site of fracture may not cause any trouble, but as a rule they prolong suppuration if infection is present. And if suppuration occur osteomyelitis ending in non-union or worse may ensue. It is best to take pictures every week, and if there is any sign of absorption around their roots remove at once. If any remain loose at the end of three weeks they should then be removed.

There is one fracture in which immediate reposition and retention should never be done and that is the "cranio-facial separation," so called by the French. Here free drainage must be allowed or meningitis may ensue, and if the face is pushed and held forcibly against the cranium in reduction drainage will be interfered with.

It often happens that wounds which are best left widely open till danger of widespread infection or secondary hemorrhage is past would, if left to themselves, take long to heal and heal with great deformity due to retraction of tissues. Healing time can be greatly shortened and the deformity due to shrinkage can be much prevented by the use of light elastic traction. It is important the pull be only slight but constant. If it is more than just enough the blood supply to the edges of the wound will be interfered with and they will cease to heal and may even slough.

Crusts should not be allowed to form on wounds. They harbor infectious organisms. Frequent removal is not so good as to prevent their formation. This can be done by spraying once in two hours with hypertonic salt, or any of a variety of antiseptics. D- Chloramine-T in oil is of value, but it irritates the skin round about.

Whether to use dressings or not is a question the surgeon in charge must decide. If the wounds are not secreting, they heal better without dressings. In fact, I believe almost all wounds heal more rapidly if left exposed provided the secretions are sprayed away before they form crusts, and the surface is kept warm.

If the edges become infiltrated or inflamed, however, copious wet hot dressings renewed as soon as they cool are indicated. If any redness or thickening with increased tenderness appear at the site of a broken bone, it should be opened to the fracture site as soon as possible. To wait for fluctuation is to court osteomyelitis.

Whether to do any plastic operation immediately after the accident is a question sometimes. It seems to me (after having tried it and having seen it tried early) that it is better to wait in most cases. One can never tell just how the tissues of the individual are going to react to the injury. Some are very susceptible to infection. Some infections are very virulent, flaps slough, and even life may be lost! I make it a rule now to do no plastic operation as long as there is any open surface near.

The feeding of patients who have wounds of the mouth or pharynx is something very important. They cannot take the usual food in the usual way and often they do not get enough to nourish them. It is easy to get the food well down into the esophagus by means of a tube passed through the nose. If there is difficulty at first a little cocaine sprayed into the nose ten minutes before passing the tube works well. I often have a patient train the beginner. The tube must be passed "straight back" along the floor of the nose through the more open side. When the pharynx is low down or the esophagus is wounded the tube is passed to some distance beyond the wound, anchored in place and left in.

It is of great advantage to have these patients associated with others of their kind. My ward cases are always more cheerful and less troublesome.

INFANTILE SPASTIC PARALYSIS*

R. D. KENNEDY, M. D., F. A. C. S., Globe, Arizona.

(American, English and German writers are prone to use the term Little's disease in a generic sense to embrace all cerebral palsies in childhood, while the French writers use this term only in cases where there is a defective pyramidal tract in the spinal cord and brain. In this paper I am using the term to embrace all cerebral palsies of childhood.)

It was first described in 1853 by Dr. Little, but for a great many years small progress was made in its treatment. In orthopedic practice it ranks second only to infantile paralysis.

Etiologically it is divided into two classes: The congenital and acquired.

Paralysis of intrauterine origin may be the result (1) of prolonged labor or pressure of instruments, causing a subcortical hemorrhage or petechial hemorrhages in the cortex; (2) maldevelopment or secondary effects of intercurrent disease of the mother.

Acquired paralysis may be due to hemorrhage, embolism, thrombosis or disease. The symptoms are both motor and mental.

The effect of the lesion of the brain and the secondary changes in the anterior pyramidal tracts of the cord is to impair the voluntary control of the limbs supplied from the affected area and, at the same time, the inhibition of the higher centers is impaired or lost; thus, together with the loss of power, there is an exaggeration of the deep reflexes, causing a spastic rigidity of the limbs, varying with the degree of voluntary control.

The mental impairment varies with the degree of involvement, being more marked in the paraplegic and diplegic than in the hemiplegic form. It varies all the way from very slight impairment to complete idiocy.

Excessive deep reflexes are characteristic of the disease and it is important, if possible, to limit this excitement.

It may be conceded that the tension of a tendon is reflexly through the spinal cord responsible for the tension of its muscle; that is to say there are nerve endings in the tendons which when excited send stimuli to the spinal cord and these are reflected to the muscles.

Now if the tendon of such a highly contracted muscle is divided, the stimulus abates, the reflex circle is broken, and the muscle ceases to be the seat of such tonic contraction. So, by doing a tenotmy you have re- So, in doing a tenotomy you have relieved the paretic group of muscles from the constant pull of the opposing spastic muscles as well as relieving the spasticity of the tenotomized muscles. The motor impairment depends on the group or groups of muscles involved. In the lower extremities the muscles usually found spastic are the adductors of the thighs, the tensor vaginae femoris, the sartorius, the hamstrings and the soleus and gastrocnemius.

The mode of walking is quite typical; the patient progresses on his toes with the heels somewhat raised, the knees flexed and pressed together, the thighs rotated inward and the body thrown forward.

The muscles opposing the spastic ones, being often paretic to start with, become exhausted from resisting the constant pull. To relieve this several operations have been devised. One of these is to produce temporary paralysis by injecting the nerves supplying the spastic muscles with alcohol.

Stoffel's operation, which consists in cutting down on the nerve and dividing certain of the branches of distribution to the muscle itself or by cutting these in the main trunk of the nerves after identification by electric tests.

The one which gives the best results is perhaps that which consists

**Read before the Arizona State Medical Association at Prescott, May 14-16, 1922.*

in tenotomies, tendon transplantation, the use of appliances and muscle re-education. In this the adductors are usually first dealt with. The skin being properly prepared, an incision one and one-half inches long is made on the inside of the adductor longus tendon and just below the fold of the groin. Through this incision the tendon of adductor longus brevis and gracilis are divided and the wound closed and sealed with collodion.

The sartorius, the tensor vaginae femoris and iliotibial band are divided in the same way by the open method, as are also the hamstrings involved. The tendo achilles is lengthened by an L incision and sutured and the limbs are now adducted, straightened with the feet at right angles, and a suitable cast or other appliance applied to maintain this position.

At the end of about three months the splint or cast is taken off during the day and movements are practiced, being sure the appliances are worn at night to maintain the correct position.

In the upper extremity the surgical relief afforded is not as a rule as promising as in the lower extremity. The most pronounced deformities usually encountered are pronation of the forearm and flexion of the wrist. To correct this, gradual extension of the wrist may be brought about by the use of a metal splint in which the angle is gradually increased. If the forearm be merely semipronated this may be disregarded. It is not easy to give a reason for the improvement which ensues, but it may be taken as a fact that prolonged fixation of spastic muscles in a position opposed to their contraction gradually lessens the severity of the spasticity.

The treatment should extend over a period of at least twelve months, without any cessation day or night. The test for relaxation of the spastic muscles must be the return of power of voluntary movement of the paretic muscles.

As ability to extend the fingers occurs the splint is shortened to give support to the wrist only, leaving the fingers free for motion.

In certain cases in which success by this method is doubtful or progress unusually slow, operation on the forearm may be necessary. This operation usually consists in making a supinator out of the pronator radii teres and transplanting the flexors of the wrist into the extensors.

To convert the pronator radii teres into a supinator, the forearm is supinated to put the muscle on a stretch so that it may be identified and an incision is made two and one-half to three inches long along the inner margin of the supinator longus which is retracted outward, the artery and nerve identified and retracted inward and the pronator radii teres identified and its tendon, which is broad and flat, freed from its attachment to the radius with a goodly piece of the periosteum.

An aneurism needle is now passed through the interosseous membrane close to the radius, and worked up and down till a space of an inch or more has been made in the membrane. A hole is now drilled through the radius from front to back, a silk ligature is then threaded through the pronator tendon with its attached periosteum, drawn through the opening in the interosseous membrane and threaded through the hole in the radius; by so doing the pronator is attached to the radius from before backward and any contraction of it acts as a supinator.

To correct the flexion of the wrist the flexor carpi radialis is divided at its attachment, dissected upward for some distance, and re-attached to the extensor carpi radialis longor and brevior. The flexor carpi ulnaris divided at its attachment and inserted into the extensor carpi ulnaris.

The next stage in the treatment consists of educating and training the muscles of the limb after ten to fourteen days have been allowed to lapse for healing to take place. The move-

ments should at first be gentle, but after about six weeks vigorous movements may be practiced.

Great care must be exercised in the selection of the cases on whom operations are to be performed. In all cases in which the mentality of the patient is badly impaired it is a hopeless task to attempt to re-educate the transplanted muscles or sometimes to even educate these patients in the use of the impaired muscles. Another feature which must not be lost sight of is if you cannot have these children directly under your care for at least a year you must have intelligent cooperation on the part of the parents or through the assistance of a trained nurse or your work will go for nothing and be another example held up to the laity of the uselessness of surgery.

X-RAY OF T HE HEART*

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INTRODUCTION

Theoretically the X-ray examination of the heart is a comparatively simple undertaking and might be expected to produce invaluable results. Practically, however, an intimate familiarity with its normal X-ray appearance is necessary before one is able to interpret the cardiac silhouette. Unfortunately only the lateral portions of the heart are freely open to examination in direct sagittal projection, and, to the inexperienced, uncertainty arises in differentiating the cardiac shadow from the mediastinal contents and the diaphragm.

X-ray projection, being conical, produces a shadow of enlarged dimensions. Hence it is impossible to determine the size of the heart by direct measurement of its projected shadow, nor can necessary corrections be calculated accurately because thoraces vary in shape with variation in distance of the heart from a film in contact with the anterior chest wall. The teleroentgenogram taken with a target-film distance of seven feet approaches parallel projection, the examination is easily and quickly consummated and provides permanent radiographic record.

The fluoroscopic method of examination is relatively laborious, but its advantages are rapidly becoming recognized in America due to its perfection in France. It permits a study of the heart from all angles with accurate estimation of its size, shape, and motion.

The orthodiagraph (See Fig. 1) was devised by Moritz in 1900, and may be easily improvised by slightly modifying any vertical fluoroscope. It is only essential that the roentgen tube, the screen and a recording point move simultaneously and that the beam of light used in observation is the central or perpendicular ray from

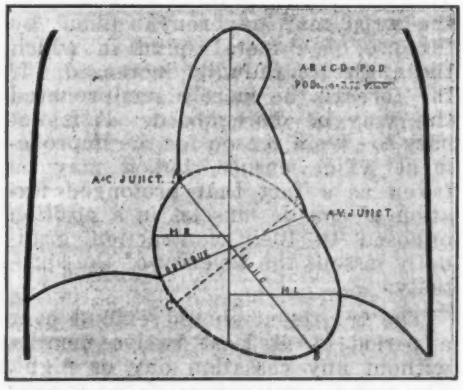

FIG. I. Orthodiagram of Normal Heart*

*Read at the joint meeting of the Medical and Surgical Association of the Southwest and the Pacific Coast Roentgen Ray Society, at Phoenix, Arizona, December, 1921.

the target of the tube. The screen may be marked at the point of incidence of the central ray and the system is then moved until the marker corresponds to the point on the cardiac border which one wishes to record and a dot is made by the recording point. A line is marked by a series of dots which when subsequently connected accomplish a reproduction of linear outlines. Such a device produces the orthodiagram which is assumed to represent an image that is the exact size and shape of the cardiac silhouette.

Certain conventional diameters are constructed upon the orthodiagram. The midline is established by drawing a perpendicular equidistant from the chest walls. The MR (median right) is the line drawn from the midline to the most salient point on the right auricular border. The ML (median left) is the line drawn from the midline to the most salient point on the left ventricular border. The oblique diameter is drawn from the right auriculo-phrenic junction to the left auriculo-ventricular junction. The long diameter is drawn from the right auriculo-caval junction to the extreme apex. The point of most importance in the cardiac silhouette is the left auriculo-ventricular junction. This point cannot be determined from the film, but is easily determined before the screen as the lowest point of travel of the node of no motion, in other words, the point of rotation of the so-called walking beam phenomenon of the left border of the heart.

THE CARDIAC FORM

Roughly, we may say that the normal cardiac outline is represented by a series of curved lines. On the right side are two fairly broad curves, the lower one representing the border of the right auricle, and the upper, less well defined, representing in most cases, the right border of the superior vena cava, sometimes the right border of the ascending arch. The latter soon becomes lost in the mediastinal shadows, to reappear on the left side as a semi-circle representing the transverse portion of the arch. The left border of the descending arch may usually be distinguished as a straight line, approximately tangential to the shadow of the transverse arch. Immediately beneath the transverse arch one sees with greater or less distinctness, a curved line, convexity outwards, representing the ascending and transverse portion of the pulmonary arch. Its downward extension is in an almost straight line diverging slightly to the left and in some cases directly joining the left ventricle, which is the most conspicuous curve in the entire silhouette, running obliquely downward to the region of the apex beat and beyond, to disappear beneath the left diaphragm. Its exact relation to the diaphragm depends upon the habitus of the patient. In slim individuals and in quiet respiration the apex may be entirely free from the dome of the diaphragm. In most normal individuals it is almost entirely exposed on deep inspiration, while in those with a high diaphragm, particularly the obese, the left ventricular border may be interrupted above the point where it reaches its maximum distance from the midline.

Interposed between the pulmonary arc and the ventricular arc, in the majority of cases, one sees a short straight line which represents the left auricle. It can be recognized from the ventricular shadow by the time of its contraction, its lower limit being marked by the point of minimum excursion.

Van Zwaluwenburg's reductions of the changes in shape of the heart silhouette to a simple numerical expression has proved of extreme value. He pointed out in 1911 that the oblique diameter roughly corresponds to a dividing line between the auricles and ventricles, consequently the area above and to the right of this line can be considered an index of the auricular area, while that to the left and below represents the size of the ventricular portion of the heart. This relationship is expressed numerically by dividing the length of the auricu-

lar segment by the length of the ventricular segment of the long diameter, and is called the auriculo-ventricular (a-v) ratio, or the index of the heart. Normally it is approximately 0.55. With an increase in the auricular area its value rises. Relative increase in the ventricular size diminishes the index. While this index varies widely, depending upon the elevation of the diaphragm in normal subjects, and is disregarded in such cases except as an index to the posture of the heart, it is of great importance in the estimation of the relative size of the different chambers of pathological hearts where changes in posture are much less significant.

The examination of the patient in the right anterior oblique position as advocated by Vaquez and Bordet is of great practical value. Narrowing or obliteration of the upper third of the uniform clear strip which represents the posterior mediastinum signifies dilatation of the aortic arch; encroachment in the middle third means enlargement of the left auricle; and modification of the lower third spells enlargement of the right auricle, sometimes of the right ventricle.

The examination of the patient in the right posterior oblique position to determine the depth of the ventricles has proven of less uniform value in our hands in patients of widely different habitus such as make up our population.

With the data from these examinations at hand we can furnish the clinician a quantitative estimation of the qualitative valvular changes which he has determined by auscultation.

THE CARDIAC SIZE

It is notorious that percussion is frequently inaccurate in the estimation of the size of the heart.

Danzer in 1919 revived the so-called cardio-thoracic ratio as a means of estimating cardiac hypertrophy, which considers the heart definitely enlarged when its total transverse diameter exceeds one-half of the internal diameter of the chest. In a series of one hundred cases recently studied in our laboratory, practically all the normal hearts with the exception of the visceroptotics show cardiac enlargement by this method. Naturally the method ignores variation in position of the diaphragm, and it would seem from our investigation that it is more accurately an index of the posture of the heart than of its size.

We have found the most simple and satisfactory method of estimating the area of the cardiac silhouette to be that of Van Zwaluwenburg, which computes the product of the long diameter and the transverse diameter, or greatest perpendicular to the long diameter which can be drawn in the closed cardiac outline (Fig. I).

In one hundred cases the area obtained in this manner showed an average variation of less than three per cent from the area computed by the most delicate instrument known to the engineering profession for determining the area of surfaces of irregular outline. The product so obtained is compared with a table of norms based upon body weight.

THE CARDIAC MOTION

We are often told by the clinician that he cares little about the actual size or shape of the heart, that the presence or absence of a valvular lesion is of little significance so long as the heart is doing its work; that the prognosis and treatment depend entirely upon the condition of the heart muscle.

From our experience in repeated roentgen observations of pathological hearts under treatment we are able to make fairly accurate estimations of how well the muscle is doing its work. We have seen dilated hearts come down from computed areas of 175 per cent to 120 per cent and have noted corresponding improvement in the density of the lower lung fields and in the shape and particularly the motion of the heart. Our roentgen examinations are made independent of any knowledge of the clinical examination and have checked closely

with the physical findings and the symptoms of the patient at the time. In fact, we have been able in certain instances to detect muscle failure twenty-four to forty-eight hours in advance of physical signs of dilatation.

Instantaneous radiographs of the heart have shown that the movement of no single border is an accurate index of its contraction and that the whole outline is necessary for such estimation. However, to the experienced observer much information is derived from the movement of the various sectors of the heart. One is first struck with the slight excursion to be seen anywhere on the cardiac border, and it is the general impression that the base of the heart is fixed and that the ventricular systole produces a wide retraction of the apex. However ,the base of the heart is generally the least fixed portion of the organ, approaching the apex in greater degree than the apex approaches the base. The simultaneous filling of the auricles tends to prevent a reduction of the long diameter of the heart during ventricular systole. The lateral movement of the lower border being restricted by the diaphragm the only margin of the heart that is free to move is the left upper border, its motion being a shortening of the transverse diameter. Another factor to be considered is the movement of the heart as a whole and frequently the movement of a certain segment of the silhouette, as for example that sometimes seen in the left auricle in cases of auricular fibrillation and that commonly seen on the right auricular border represents not the intrinsic movement of that segment, but rather the transmitted motion of the organ as a whole.

Certain features of disturbed motion are ,however, subject to fluoroscopic examination. In visceroptotics where the heart lacks the support of the diaphragm and is freely suspended from its attachment in the mediastinum to the deep fascias of the neck, the base is relatively fixed and the heart as a whole moves as a result of the recoil from the expulsion of blood into the aorta. In the pathological heart one learns to recognize the disturbances of motion. The impulse may be excessive or insufficient or may give one the impression of being disorganized or lacking in coordination or purposefulness.

THE AORTA

Normally the aorta is not a conspicuous shadow, its lower right border is usually fairly well seen, but is soon lost in the shadow of the sternum. The transverse arch on the left is fairly prominent, but is all but hidden behind the sterno-clavicular articulation. On the screen the left lateral surface of the descending portion is usually obscured by the pulmonary and hilus shadows, but may be fairly well studied in the radiogram.

Age uncomplicated by hypertension causes an increase in the prominence of the arch throughout. Its density is increased and occasionally calcified plaques are noted in the portion if the wall which is viewed tangentially. It is not greatly widened, but strikingly increased in length, resulting in a greater prominence of the transverse arch and in a downward displacement of the base of the heart. The heart resting on the diaphragm consequently assumes a horizontal position. In arteriosclerosis the aorta approximates the senile type. In hypertension the arch may be slightly widened, the upper left segment prominent, with perhaps a slight increase in density. Lues shows an early tendency towards increased width of the aortic shadow, a common picture being that of an undue prominence just above the auriculo caval junction. Frequently the dilatation extends the entire length of the visible aorta. In such types of aortic change the pulsation is not excessive. Especially in the case of lues one notes a distinct reduction of the excursion. In rheumatic aortic insufficiency, on the other hand, the arch shows no appreciable dilatation, but a wide expansile excursion.

An outline of the diagnostic and salient features of the more common typical cardiac lesions as revealed by the fluoroscope and orthodiagram is given below.

MITRAL INSUFFICIENCY

The heart is round in shape. The area is enlarged, varying with the extent of regurgitation and secondary dilatation. There is an elevation of the auriculo caval junction, the apex is fairly well free from the diaphragm, there is a relatively long oblique diameter, the index is moderately increased from .6 to .8, the left auricle is conspicuous, the arch may appear shortened, the lower and middle thirds of the posterior mediastinum are narrowed or obliterated; the critical angle of rotation may be moderately increased.

MITRAL STENOSIS

The outline has the shape of a boxing glove. There is slight or no enlargement of the area. The index is high from .7 to 1.2. The right auricular border is fairly prominent. The auriculo caval junction is high. The posterior mediastinum is narrowed or obliterated in the middle third. There is not infrequently a prominence of the pulmonary arch.

AORTIC INSUFFICIENCY

This gives the prominent snub-nose or shoe-shaped cardiac silhouette. The involvement is almost purely of the left ventricular chamber. There is an increased long diameter. The left auricle either does not present or is relatively small. The right auricle is not prominent. There is an increased area and a reduced index. The apex is low and difficult to free from the diaphragm. There is a high critical angle of rotation and a clear posterior mediastinum. The arch is either of normal caliber with excessive excursion or it is wide particularly at its base and prominent just above the right auricle and is surprisingly quiet. The differentiation from hypertension is often difficult, from the fluoroscopic examination alone.

AORTIC STENOSIS

We are unfamiliar with the shadow in this condition. Cases referred to us as such have generally been senile hearts with markedly sclerotic arches.

CARDIAC HYPERTROPHY AND HYPERTENSION

The enlargement is almost purely left-sided, ventricular. Generally no change of index. There is an increased critical angle of rotation and a free posterior mediastinum. This condition is rarely seen until cardiac symptoms appear as a concomitant of dilatation and myocarditis which alters the picture as follows: The enlargement is more nearly symmetrical but still predominantly left sided until a late stage. The late stages give the largest areas on record. The arch may show little change, but is generally widened with reduced excursion and increased density. It is often difficult to differentiate this condition from aortic insufficiency, rarely from lues.

MYOCARDITIS

We divide this into two types, first, those without cardiac dilatation (a) senile type, (b) arteriosclerotic type (angina pectoris). Second, those with cardiac dilatation, (a) the end stage of practically every valvular disease, (b) the end stage of nutritional changes, (c) the end stage of toxic changes.

In cases of the senile type we see comparatively little enlargement. The position is transverse, usually considerably obscured by the dome of the diaphragm. There is an apparent lengthening of the arch with a prominent upper segment to the left. There is a low position of the auriculo caval junction. Occasionally we see associated senile emphysema and exaggerated bronchovascular shadows of the articulated type.

In myocardial degeneration with dilatation the area is increased, the outlines are variably altered. The shadow is obscured by a high diaphragm and not infrequently the increased density of adjoining lower lobes of the lungs. Often only en-

largement can be determined. The cardiac movements are disorganized and lack in purpose and effectiveness.

In myocarditis due to hyperthyroidism there is moderate or no enlargement, the heart is shapeless, flaccid, the pulsations are futile, the impulse is not well sustained, there is tachycardia and generally a substernal goitre.

CONGENITAL LESIONS

Our experience with this type of lesion is limited. At times we have been able to diagnose definite lesions which have agreed with clinical findings. In general it is not difficult to determine that a congenital lesion is present, though we are not always certain of its nature.

NEUROCIRCULATORY ASTHENIA OR IRRITABLE HEART

The few cases of this condition which we have seen have invariably shown hearts of small area, most generally of the drop type.

BIBLIOGRAPHY

Karshner, R. G., and Kennicott, R. H., A Practical Method of Roentgen Examination of the Heart based upon the Study of One Hundred Normal and Pathological Cases; Am. Jour. of Roentgen., Vol. IX, N. S May, 1922.

Van Zwaluwenburg and Warren, The Diagnostic Value of the Orthodiagram in Heart Disease, Archiv. Int. Med., Vol. 7, 1911, 137.

Van Zwaluwenburg, J. G. A Plea for the Use of the Fluoroscope in the Examination of the Heart and Great Vessels. Am. Journ. of Roentgen, Vol. VII, N. S., 1920, 1.

Vaquez, H. et Bordet, E., Le Coeur et l'Aorte, J. B. Bailliere & Fils, Paris, 1918.

THE RELATION OF NASAL AND ACCESSORY SINUS DISEASE TO BRONCHIAL ASTHMA*

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The fact that certain pathological conditions within the nose and accessory sinuses are frequently coexistent with bronchial asthma, and that they, in a fair percentage of the cases, have a direct bearing on the asthmatic attack, has been repeatedly noted by many observers.

In 1871 Votalini reported the removal of nasal polypi in a patient suffering from asthma. It was his opinion that "either the polypi reflexly produced the asthma, or these new formations in obstructing respiration altered its chemical processes and thereby the structure of the lung tissue."

About ten years later Fraenkel brought into prominence the frequently quoted nasal reflex neurosis theory. He considered asthma with nasal polyps in the light of a reflex spasm, localized in the bronchial muscles and produced by an irritation of the sensory nasal nerves.

Following Fraenkel's work, there were many contributions to the special literature, all having for their theme some form of nasal disease, not only as the direct cause of asthma, but of many other diseases as well. This unbounded enthusiasm, which resulted in many unwarranted claims, served to bring the nasal reflex neurosis theory, for a time at least, into disrepute.

As applied to bronchial asthma, the nasal reflex theory suggests that, by irritation of the olfactory nerves, the nasal branches fo the trigeminus or the sphenopalatine ganglion, there results a stimulation of the constricting fibres of the vagus, the phrenic or sympathetic, with resultant bronchial spasm.

Many of these writers have emphasized the reflex nature of asthma as related to intranasal and sinus disease. The evolution of this theory was largely the result of experimental investigation on animals.

Gording summarized the experiments of Sandmann, which were done for the purpose of the more minute study of the bronchial muscles. Sandmann, among others, stated that an

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irritation of the nasal mucous membrane in noncurarized animals caused in addition to the expiratory cessation of respiration, a narrowing of the air passages by contraction of the bronchial muscles. "In this way the protection of the respiratory organ against injurious influences is increased, and at the same time the removal of mucus from the bronchi and alveoli is greatly facilitated." He asserts, that by his experiments, he had established a physiological basis for asthma of nasal origin.

Dixon and Brodie found that, by intranasal irritation of the upper and posterior portion of the septum in decerebrated animals, they were able to produce contraction of the bronchial muscles. This reflex, however, ceased to appear after section of the vagus.

Certain intranasal areas are supposed to be more susceptible to the irritant than others. Hack has demonstrated sensitive spots on the anterior part of the lower and middle turbinates. Killian holds to the theory that the most markedly sensitive areas of the nasal cavity are to be found on the tubercle of the septum and on the anterior part of the inferior turbinate bones. He also makes the observation that the respiratory mucous membrane, with normal sensibility, does not give rise to reflex neurosis. Certain predisposing causes are necessary, and only when they are present can the neurosis occur.

In explaining asthma as a reflex from nasal disease, Sluder advances the hypothesis that the sympathetic nervous system is capable of transmitting afferent impulses which are not painful, sensory ones, because many patients with nasal asthma do not have pain of any kind." Since the sympathetic nervous system in the nose is derived from the nasal ganglion, the impulse may be traced from the inflamed nose by way of the nasal ganglion, the vidian nerve, the carotid plexus, the sympathetic trunk in the neck to the lower cervical and first thoracic ganglion, which are often united and frequently spoken of as the stellate ganglion."

The same writer has had more success in the treatment of asthma and coincident nasal disease, where he has treated the posterior part of the nasal cavity, and he has also found that he can start asthma reflexes from this locality, i. e., from the nasal ganglion or the sphenoid sinus. Local inflammatory cases, which did not prove sensitive to proteins, received most relief from the control of the local lesions by surgery. Also, an autogenous vaccine proved helpful when bacteria from the lesion could be grown.

There is no denying that the respiratory center of the medulla can be stimulated by irritation, mechanical or otherwise, of the peripheral terminations of the trigeminus, which are distributed over the nasal mucous membrane. Coughing and sneezing are familiar examples of this reflex. Animal experimentation, by careful investigators, has demonstrated an intimate reflex association between the nerve supply of the nasal mucosa and that of the other parts of the respiratory tract.

Modern experimental medicine, however, has greatly altered our views in regard to many phases of asthma. The earlier conceptions that polypi, deviated septum, spurs or ridges, produced asthmatic attacks, as a result of mechanical irritation of sensory nasal nerves, has been largely superseded by more plausible theories. The general belief now is that nasal abnormalities are not fundamental causes, but rather contributory, inasmuch as they interfere with normal drainage, and thereby favor absorption of bacterial toxins or proteids.

We can recall two patients in whom attacks of asthma could be induced by irritating with a probe some of the more sensitive intranasal areas. Both had hyperplastic ethmoiditis. However, these observations would not warrant the conclusion that the attacks were the result of a nasal reflex, as both patients were decidedly neurotic. The psychic element in

these so-called reflex nasal asthmatics must not be overlooked. Cooke believes that many of these patients, as the result of repeated attacks from a specific pretein, show a gradual development of what may be termed as asthmatic habit. He advances the theory that "repeated anaphylactic reactions in the mucous membrane and smooth muscle fibre of the bronchi seems to produce such an unstable equilibrium, and intense irritability, that they are reflexly affected by any stimulus in the domain of the extended vagus system, and these reflex paths become so established, and the instability so great, that any and all transitory and trivial stimuli produce great and prolonged effects, always translated, in these asthmatic cases into terms of bronchial contraction and congestion."

With our present knowledge of protein sensitization, the manner in which nasal diseases may be causative factors in the production of asthma, has given rise to much discussion as to the probability of their being in some way connected with the phenomena of anaphylaxis.

In 1910 Meltzer suggested the relationship between asthma and anaphylaxis. He based his theory on the fact that a complete clinical analogy exists between the phenomenon of bronchial asthma and that produced experimentally in animals. Meltzer's observations are in accord with those of other investigators.

Sewall demonstrated that previously sensitized guinea pigs may react to intranasal instillation of horse serum, and develop typical attacks of bronchial asthma.

Summarizing the findings of certain experiments in animal anaphylaxis, Walker concludes that a foreign protein applied in the upper respiratory tract of a sensitized animal irritates the constrictor fibres of the vagus, producing a stenosis of the smaller bronchi, by causing a spasm of their circular muscles. This he believes to be the mechanism of a typical attack of bronchial asthma.

It has been assumed by several writers that the protein is derived from the disintegration of the mucoid or purulent secretion found in the nose or accessory sinuses. The intranasal changes occurring in an asthmatic attack, viz., turbinal turgescence, hyperplasia of the nasal mucous membrane, and resultant mucoid secretion and nasal stenosis, have been suggested as part of the clinical picture of an anaphylaxis.

Adequate proof of the first statement is still wanting. The vasomotor changes alluded to in the second statement, however, are matters of every-day clinical knowledge. On the other hand, the truth of this observation offers a very poor premise upon which to base any definite conclusion as to the beneficial results that will follow intranasal surgery, in the case of asthmatics allergic to a foreign protein. It is the protein element, and not the bacterial toxin or infectious element, that is essential for the production of an anaphylaxis. To theorize that a bacterial infection may, in some mysterious manner other than by the action of its protein, be accountable for these nasal vasomotor changes, is not in accord with well-authenticated, experimental and clinical data. One of the most notable accomplishments of comparatively recent experimental medicine is the rescue of vasomotor rhinitis and asthma from the nebulous province of vague speculation. It must be admitted that they now have been placed upon a sound and definite, if not wholly complete, etiologic and therapeutic basis.

Walker, Cooke, and other workers in this field, have demonstrated that about fifty per cent of patients with true bronchial asthma are sensitive to foreign proteins of some sort, viz., pollens, foods, epidermis of animals, or bacteria. In Walker's series, ten per cent of the total number studied were found sensitive to various bacterial proteins. He thinks any type of bacterial protein may cause bronchial asthma. There is still another fifty per cent which are non-sensitive. These are classed as non-anaphylac-

tic, and belong to the asthmatic bronchitis type. In the non-sensitive group he finds forty-six per cent relieved of their asthma, and sixteen per cent greatly improved by treatment with vaccines. Obviously, those cases belonging to the bacterial protein group (which form a comparatively very small number) and those of the non-anaphylactic group would be most amenable to relief, following removal of indicated foci of infection. Our own experience has been that the type of asthmatic in whom the best results might be expected from treatment directed to the nose or sinuses, belongs to the non-sensitive group. Two of our patients with seasonal hay fever, who suffered with asthma throughout the year, were benefited by correcting abnormal nasal conditions. The relief afforded, however, could be attributed to the elimination of a superimposed bacterial infection.

Of the pathological intranasal conditions that are found in asthmatics, hyperplastic ethmoiditis is the most frequent. This is characterized by inflammatory changes of the mucosa lining the ethmoidal cells, which often results in the formation of polypi. The polypoid growths may be hidden within the cells, or may protrude from the cell ostia and fill the entire nasal cavity.

There seems to be some unexplained relationship between the occurrence of nasal polypi and asthma. In a series of twenty-eight of our cases, twenty-one showed well-defined pathological changes in the ethmoids. Only two suffered from a purulent ethmoiditis. The comparative infrequency of this form of the disease in asthma might be explained by the fact that ethmoidal empyema is more often of the open than the closed type, and thereby conditions are rendered less favorable to protein absorption. There was chronic antral empyema in three cases, and one case of unilateral pansinuitis. Four of the ethmoidal cases were complicated by markedly deviated septa. In the polypoid cases, complete exenteration of the ethmoidal cells was done. Removal of polyps alone in these cases is useless. Occasionally, although a most thorough operation has been done, there is apt to be a recurrence. Following operations autogenous vaccines, made from the sputum and nasal secretions, were employed in several of these cases with good results. The infected sinuses were opened and drained. Observations were made over periods of from one to three years, and earlier conclusions checked, as far as possible. The results were as follows: Four patients were completely relieved of their asthma, and ten showed decided benefit, both the number and severity of their attacks being very much lessened. Six cases were not improved, and the final outcome of the remaining eight could not be determined.

CONCLUSIONS

1. The fact that chronic infection of the nose and paranasal sinuses is of frequent occurrence in bronchial asthma is well established by clinical experience.

2. In cases found sensitized to foreign proteins, the surgical treatment of pathological conditions will result in benefit only inasmuch as they are accompanied by properly directed measures towards desensitization or the removal of the allergic element.

3. There are a small number of cases, that is, those sensitized to bacterial proteins, and a greater number, viz., those belonging to the non-sensitive group, in which the more favorable may be looked for by attention to the nose or sinuses.

4. In all cases of bronchial asthma skin tests should be done, in order to determine whether or not they have a protein sensitization as their basis.

5. In many cases of asthma we must reckon with an underlying bronchitis as an etiologic factor.

6. As the upper respiratory tract offers the most accessible route for bacterial infection to the bronchial

tree, the relief afforded can be attributed to the removal of infected foci which tend to keep up the continued bronchial infection.

REFERENCES

Gording Reidar: The Nasal Reflex Neuroses, Annals of Otology, Rhinology and Laryngology, June, 1920, Vol. 29, No. 2.

Dixon and Brodie: Contributions to the Physiology of the Lungs, Journal of Physiology, Vol. 29, 1903.

Sluder, G.: Asthma as a Nasal Reflex. J. A. M. A., 73:589, August 23, 1919.

Cook, R. A.: Hay Fever and Asthma, N. Y. Medical Journal, March 30, 1918.

Metzler, S. J.: J. A. M. A., September 19, 1910.

Sewall, H.: Journal of Lab. and Clinical Med., 1917, Vol 2, page 874.

Walker, I. C.: The Treatment of Bronchial Asthma with Proteins, Arch. Int. Med., 22:-466,, 1918.

Walker, I. C.: The Treatment of Bronchial Asthma with Vaccines, Arch. Int. Med., 23:-220, 1919.

THE VALUE OF BLOOD CHEMISTRY TO THE PRACTITIONER*

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Chemistry plays a role of ever-increasing importance in the general practice of medicine, while in the field of metabolism, specifically, it has become almost the alpha and omega. We have long known much regarding the etiology of diseases and still more of their pathology, the end results, so to speak, but, as regards the chemistry of their development and subsequent progress, there has been a lamentable paucity of accurate, definite knowledge until comparatively recent times. Particularly is this true of the so-called endogenous diseases, those of metabolism, and it is fortunate indeed that it is this group precisely that the most satisfactory results have been latterly obtained along chemical lines of investigation. Numerous metabolic alterations, notably the elimination of the katabolic products, are now definitely determinable by laboratory methods.. No matter how divergent may be the views held upon points such as the technical interpretation of results, or consideration of what constitutes the normal, it is undeniably true that the findings obtained in pathological conditions have attained positions of high value as indicators of the nature of the metabolic disturbances resulting in abnormal production or faults in elimination of the waste products of the body.

Medical chemistry deals largely, if not exclusively, with the study of the body fluids and gases. Of these, it was but natural that the urine, because of its ready accessibility, should have been subjected to the greatest amount of investigation in former years or indeed until very lately. For example, Thomas and Birdsall[1] in 1917 in an exhaustive review tabulated no less than forty-five tests for kidney function as applied to the urine, about equally divided in number with reference to the viewpoint of elimination and retention of waste products. Perhaps no better proof could be advanced as to the inadequacy of the urine to correctly outline the metabolic picture than the very multiplicity of the criteria advanced from time to time for the evaluation of its constituents. However, there is a deeper reason, more practical and of infinitely greater scientific import, to be found in the fact that the urine being an excretory product shows primarily, if not indeed exclusively, what substances only, or their amounts, which are being cast out of the body and not with any degree of certainty what factors, either qualitatively or quantitatively, are being retained in the blood or the general economy. It is precisely this matter of retention that is of the utmost importance to the patient as re-

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gards his life expectancy and to the physician engaged in diagnosis, treatment and prognosis of the suspected metabolic disorder. Hence, without in the least decrying the importance of making a beginning study of the chemistry of the urine, it is the investigation of the chemistry of the blood that has during the past decade brought us much nearer the elucidation of many clinical problems.

Reliable data on the chemical composition of the blood, both in health and disease, are primarily the result of American observation with American methods. The names of Folin, Benedict, Van Slyke and Victor Meyers are among those to whom our debt of gratitude is largely due in this connection and it should be a source of gratification that there is no "Made-in-Germany" tag or other foreign label upon most of the discoveries and progressive achievements of modern blood chemistry.

In so brief an outline as this, it is possible to consider only a few of the chemical observations which have served most practically and helpfully as guides to the diagnosis and treatment of every-day pathological problems, yet it may not be amiss to merely bound the field covered by present-day blood chemical research. There are included in this domain accurate laboratory methods for the appraisement of the total blood volume, the blood proteins (serum albumin and globulin), and improved devices for percentage of hemoglobin; the estimation of the total non-protein nitrogen and its individual components (urea, uric acid, creatinine, amino acids, creatin and ammonia); the determination of a dozen mineral constituents ranging from sulphates and chlorides to iron, the lipoid elements such as fat, lecithin and cholesterol; the measurement of blood gases, to-wit, carbon dioxide, carbon monoxide and oxygen, with valuation of the hhydrogen ion concentration; the quantitative gauging of sugar, acetone bodies and phenol; and finally of enzymes like diatase, lipase and catylase. Before discussing the pathological variations of some of these factors which have been found most useful to the clinician in every-day practice, it is well to bear in mind the generally accepted normal range of such substances.

TABLE 1.

BLOOD VALUES

Substance	Normal	Serious Increase	Extremes Recorded
Total Non-Protein Nitrogen	25 to 30 mg.	80 mg.	300 mg.
Urea Nitrogen	12 to 15 mg.	50 mg.	250 mg.
Uric Acid	1.5 to 3 mg.	7 mg.	10 mg.
Creatinine	1.0 to 2.5 mg.	3.5 mg.	10 mg.
Glucose	0.06 to 0.12%	0.4%	0.8 to 1.0%
Cholesterol	0.15 to 0.2%	0.5%	0.9%
Chlorides as Na Cl	0.45 to 0.60%	Above 0.60%	0.8%
Carbon Dioxide Combining Power	73 to 53 c.c.	40 to 31 c.c.	16 c.c.
Alkali Reserve of Blood Plasma	RpH 8.5 to 8	RpH 7.7	RpH 7.

....THE TOTAL NON-PROTEIN NITROGEN of the blood is about 1 per cent of the nitrogen therein contained and is principally made up of urea nitrogen, uric acid and creatinine. It is well to remember that urea is largely exogenous in origin, creatinine almost entirely of endogenous formation, with uric acid occupying an intermediate position, urea being formed mostly in the liver from ammonia set free in digestion, but not of immediate use to the organism, uric acid originating as a result of enzymatic and glandular activity and creatine apparently formed in the muscle tissue. The total non-protein nitrogen of the blood is practically always increased in any disturbance of kidney function and varies from the high normal of 30 mg. per 100 c.c. to 50 mg. or thereabouts in early interstitial nephritis and finally to the massive figure of 300-350 mg. per 100 c.c. in terminal interstitial nephritis with uremia. This estimation forms, therefore, a most valuable single test for impairment of elimination by the kidney. A closer study of each of the three principal non-protein nitrogen functions, viz., urea, uric acid and creatinine, will give yet more fruitful information for a close differential diagnosis or accurate prognosis.

Urea, by the selective action of the kidney, is maintained at a level of about 50 per cent of the total non-protein nitrogen of the blood and any impairment whatsoever of renal function will hence result in positive, measureable increase of urea nitrogen. Increase of blood urea nitrogen will occur not alone in chronic interstitial nephritis, terminal stage (75-300 mg.) and uremia (350 mg.), but likewise in some cases of acute nephritis and polycystic kidney (50 to 75 mg.), in bichloride poisoning (240 mg.), malignancy (58-60 mg.), pneumonia (46-50 mg.), intestinal obstruction (44 mg.), lead poisoning, syphilis and cardiac disorders with renal involvement. Advanced diabetes, either from administration of a high protein diet or a complicating nephritis, often gives high figures for urea. In eclampsa, contrary to old-fashioned conceptions, which in some mysterious way affiliated this syndrome with uremic poisoning, we find that there is slight, if any, elevation of urea and a normal pregnancy even shows "subnormal" urea findings. The blood urea has still another function as a valuable preoperative prognostic test, especially in prospective prostatectomy, cases showing 20 mg. per 100 c.c. being regarded as good operative risks, but figures over 30 mg. affording a poor operative prognosis. In parenchymatous nephritis, contrary to the interstitial variety, the blood urea is relatively low (20 to 50 mg.), the retention of chlorides being an equally important factor as compared with urea retention in nephrosis.

As regards the retention of *Uric Acid* in the system, we know that this ingredient is the least soluble of any of the three principal non-protein fractions. Hence, it is not surprising that high values for uric acid are found not only in the later stages of chronic interstitial nephritis, but in the very early stages of this disease before either urea or creatine are unduly retained, thus furnishing, when the possibility of gout is absent, a valuable and early diagnotic sign not infrequently preceding the finding of either albumin or casts in the urine. Gout itself is almost invariably associated with an increased uric acid content of the blood (6.0 to 9.5 mg.) being found, and the differentiation of this disease from arthritis, with figures of 1.6 to 3.6 mg., can be readily accomplished by this estimation unless the arthritis, as is infrequently the case, happens to be complicated by nephritis, under which circumstances the accompanying increase in urea and total non-protein nitrogen should prevent confusion. Creatinine, normally nearer 1 m. than 2 mg., is usually the most readily eliminated of any of the three principal nitrogenous waste products and, therefore, an appreciable retention of creatinine, i. e., 4 mg., does not occur until the activity of the kidney is greatly

impaired and considerable retention of urea and to a lesser extent of uric acid has already taken place. Moreover, those cases of chronic nephritis in which creatinine has risen above 5 mg. per 100 c.c. rarely show improvement, and, in fact, almost invariably die soon after; thus affording a valuable prognostic criterion, since it appears that the kidney is never able to overcome the handicap of a high creatinine accumulation.

The question of decreased kidney function or renal impairment is frequently linked with that of cardiac or vascular diseases so that the kidney is not alone to be considered, but even in cases thus complicated or involved the estimation of the non-protein nitrogen factors is of value just the same. Williams[2] in a lengthy series of cases and experiments, summarizes this question as follows:

1. Chronic nephritis with hypertension and uremia is characterized by a marked increase in non-protein nitrogen substances in blood, more particularly of uric acid.
2. Cardiac insufficiency without nephritis is associated with moderate retention of non-protein substances in blood, more particularly of uric acid.
3. In chronic nephritis, with clinical and anatomic evidence of disease, there is always nitrogen retention and renal insufficiency.
4. Chronic nephritis of moderate degree with hypertension is associated with moderate increase in waste nitrogen and lessened kidney function.
5. Presence of albumin and casts in the urine is not necessarily diagnostic of nephritis nor is their absence necessarily indicative of the non existence of such disease.
6. Improvement of the circulatory disturbance is accompanied by a decrease in the various nitrogenous extractives of the blood, more particularly the uric acid, and this may suggest that, at least, a part of the damage done the kidneys is a sequence of the alterations in its nutrition brought about by passive hyperemia.

THE SUGAR OR GLUCOSE of the blood is normally 0.06 per cent to 0.12 per cent. The excretion of sugar by the kidney has been well likened to the safety valve of a steam boiler, and the real condition to which attention should be directed is the possible excess of sugar in the blood (hyperglycemia) rather than sugar in the urine in excess (glycosuria, or more properly glycuresis). Especially will this be clear when it is remembered that during the advance of a case of diabetes mellitus the measure of the sugar in the urine becomes gradually a less and less safe index of the patient's condition, and consequent guide to treatment, since the permeability of the kidneys becomes lowered or the "threshold point" for sugar raised. Thus in early cases of diabetes, one may note an excretion of sugar in the urine when the blood sugar has risen to a point, let us say, of 0.16 per cent, but in advanced cases, most often complicated with nephritis symptoms, blood sugar values of 0.2 per cent to 0.3 per cent or higher may be noted without the appearance of any glycuresis. In the matter of the treatment of diabetics, therefore, it is highly desirable to maintain the blood sugar level, which is ascertainable only by periodic routine examination of the blood, as nearly at a normal figure as possible even though severe dietary restrictions are required, since, in many cases, the acquired high sugar threshold will permit a dangerously liberal diet without the appearance of sugar in the urine. The following case is illustrative of the value to both patient and physician of such regular examinations, as a control of the diet:

C. W. W. (Case of Dr. G. W. Purcell, Tucson, Ariz.) Male, age 40, occupation, tire salesman. Family history unimportant. Personal history negative up to May, 1921, when he contracted pertussis from his daughter and showed bona fide "whoop" for several weeks. In January, 1922, he consulted a physician because of frequent urination and thirst and sugar was found in the urine. April 18th, he consulted Dr. Purcell, at which time his weight had decreased from 160 lbs. to 126 lbs. The urine amounted to 2200 c.c. for 24 hours, Sp. Gr. 1040 and showed 10% sugar by titration with Benedicts Solution. The glucose content of the blood on this date was 0.375%. Upon starvation diet for 48 hours, the thrist and frequency of urination ceased and the sugar of the urine fell to 0.2%. He was put upon 5% carbohydrate diet and in two days the urinary findings were: 24 hour total 1260 c.c., sugar 0.14%, Sp. Gr. 1016 and blood sugar had dropped to 0.16%. The physical examination showed nothing abnormal in heart, lungs or abdomen; Wassermann negative; blood pressure, systolic 130, diastolic 85. He has remained continuously on the 5% car-

bohydrate diet ever since and, while he has gained no weight, he looks and feels well. The weekly examinations of the urine have invariably given values between 0.08% to 0.2 sugar, Sp. Gr. never exceeding 1026, a trace of acetone upon one occasion but never diacetic acid or albumin. His monthly blood examination on May 26th gave glusoce content of 0.086%.

Those who may be skeptical or timorous as regards undernutrition on low carbohydrate or starvation diets in diabetes mellitus should bear in mind a recent positive assertion of Allen[3] that clinical evidence to date shows that by sufficiently thorough dietary control the downward progress of most cases of diabetes is either halted or almost indefinitely delayed. And Joslin[4] stated lately before the New York Academy of Medicine, "There are few diabetic patients starving themselves to death from not eating, but there are many who are starving themselves to death while eating too much by voiding pounds of sugar in the urine. Many of these escape actual death by starvation only because they die prematurely of coma." The routine examination of the glucose content of the blood is the one sure method of gauging the regulation of the diet, comparatively checking the minimum excretion of sugar in the urine and furnishing the warning signal far preceding the advent of coma. Concerning so-called renal diabetes (which presents the symptoms of low-grade glycosuria, probably with proteinuria, but lacking the constitutional symptoms of diabetes mellitus), the diagnostic signboard is the absence of excess sugar in the blood, since diabetes mellitus is invariably accompanied by hyperglycemia. The development of an accurate means for the estimation of blood sugar has also made possible tests for carbyhydrate tolerance on a basis of practicability and value. This procedure consists of a series of blood sugar determinations following the ingestion of a measured amount of glucose showing what is known as the sugar tolerance curve. This peculiar type of curve is noted by Friedenwald and Grove[5] in many cases of gastrointestinal cancer and carcinoma where carbohydrate metabolism is disturbed probably in the opinion of Langston[6] by a secretion of the tumor cells. This same type of curve is found in many cases of tuberculosis[7], also in some staphylococcus and streptococcus infections[8], and always in diabetes mellitus and hyperthproidism. In edocrine conditions generally the blood ratio always varies directly with the activity of the thyroid gland and low values are hence found in myxedema and cretinism. Hypoglycemia is also the rule in Addison's disease, due to disturbance of the adrenals, but high values in acromegaly are obtained when the hypertrophy of the pituitary acts as an accelerator of carbohydrate metabolism.

In close connection with the subject of blood sugar is the condition called acidosis, insomuch as this term was originally coined by Naunyn to apply to the ketosis of diabetes. Later knowledge has shown, however, that acidosis may result either from an abnormal formation of acid substances such as is found in diabetes or from a decreased elimination of normally formed substances as in nephritis or the retention of acid phosphate as in infantile diarrheas. There are a number of different criteria for measurement of the degree of acidosis, but the carbon dioxide combining power and the alkali reserve of the blood plasma are regarded as most valuable, the latter, because of greater technical ease of accomplishment, being possibly less likely to error while fully accurate for all clinical purposes and hence preferable. Normal values range from 53 to 73 c.c. of carbon dioxide to 100 c.c. of blood plasma for the former method and an arbitrary expression known as RpH 8.0 to RpH 8.5 for the latter in terms of hydrogen ion concentration.

CHOLESTEROL is found normally in the human blood in the proportions of 0.15 per cent to 0.2 per cent. Hypercholesteremia occurs in arteriosclerosis (0.23 per cent), nephritis (0.22 per cent, diabetes, especially when

accompanied by acidosis (0.34 per cent to 0.82 per cent, obstructive jaundice (0.29 per cent), in many cases of cholelithiasis, in the early stages of malignant tumors (0.20 per cent), pellagra (0.24 per cent), and in pregnancy from the fourth month until at least the middle of the post-partum period (0.23 per cent). The chief condition in which low cholesterol values are noted is anemia (0.07 per cent), and when the anti-hemolytic action of cholesterol is called to mind the deficiency of this substance may be seen to have possible practical significance.

THE CHLORIDE CONTENT of the blood, normally 0.45 to 0.50 per cent in terms of sodium chloride, has been well understood longer than any other blood constituent which has been mentioned in detail, but its practical value is probably not nearly so great as the others. The blood chlorides are increased in nephritis (0.55-0.60 per cent), especially of the parenchymatous variety, in pernicious anemia (0.51-0.60 per cent), in some cases of malignancy (0.55 per cent), and certani cardiac conditions, while on the other hand, low figures are found in fevers, diabetes (0.35 per cent), and pneumonia (0.35 per cent). As regards nephritis, the excretion of chlorides and of nitrogen seem to be fairly independent functions. In parenchymatous nephritis, the chloride elimination is much more affected than that of the nitrogenous waste products, while, by contrast, the reverse is the case in nephritis of purely interstitial type as we have seen under non-protein nitrogen.

Much has been written to date on the subject of blood chemistry, many divergent views expressed from time to time, so that to some extent the clinician has been at sea in regard to the actual value of such procedures in the daily practice of medicine. However, the values and determinations which have been sketchily outlined in the foregoing are bearing nobly the tests of time and experience and proving constantly to those who avail themselves of this knowledge their practical applicability to problems encountered each day. One must perforce accept the results of chemical examinations of the blood as one more link in the chain of evidence leading to the discovery of the actual seat of any disturbance in the body. But let it be said that a blood chemical result is never found to be the weakest link and not infrequently is it eventually discovered or acknowledged to be the missing link or final bond which lengthens the chain sufficiently to lift the problems from the depths of uncertainty to the broad, safe level of an accurate anatomic diagnosis and to permit of rational therapy and an understanding prognosis.

REFERENCES

1. Jour Am. Med. Ass'n., Vol. LXIX, No. 20.
2. Arch. Int. Med., Vol. XXVIII, No. 4.
3. Jour. Metabolic Research, Vol. I, No. 2.
4. Jour. Am. Med. Ass'n., Vol. LXXVIII, No. 20.
5. Am. Jour. Med. Science, Vol. CLXIII, No. 1.
6. Jour. Lab. and Clin. Med., Vol. VII, No. V.
7. Ibid.
8. E. Seitz abst. Journ. Am. Med. Ass'n., Vol. LXXVIII, No. 14.

AMERICAN ROENTGEN RAY SOCIETY: Among the roentgenologists who attended the annual meeting of the American Roentgen Ray Society, in Los Angeles, Sept. 12-16, were Drs. H. L. Goss, Will Wilkinson and W. Warner Watkins, of Phoenix; H. D. Ketcherside, of Yuma. Dr. Metzger of Tucson and Dr. Couch, of Phoenix, were also in attendance at this meeting.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE: The Southwestern Division of the A. A. A. S. met in Santa Fe, N. M., September 6th to 9th. The Chairman of the Executive Committee, Dr. E. C. Prentiss, of El Paso, reports a very fine program and an excellent attendance. The local arrangements were perfect and the entertainment not to be surpassed.

The new officers of the Division are: Dr. V. M. Slipher, Director of the Lowell Observatory, Flagstaff, Arizona, President; Prof. Howard Estill, University of Arizona, Secretary-Treasurer. The time and place of the next meeting were not decided upon.

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Information of interest to all readers, together with directory of officers of the constituent societies and the Board of Managers of this magazine, will be found following the Table of Contents on pages 1 and 2 of the Advertising Section.

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MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST

The eighth annual meeting of this Association is to be held in El Paso, early in December. The program is already in process of arrangement, with Dr. H. H. Stark, of El Paso, Chairman of the Program Committee. All papers which are to be presented before this meeting must go through the hands of the Chairman of the Program Committee, or come through some member of the committee.

A custom which has become a rule, practically, is that the entertaining Society (in this instance, the El Paso County Society), shall devote its energies to the clinical portion of the program, allowing all places on the scientific program of papers to be filled by outside members, or invited guests. These guests are to be invited by the Chairman of the Program Committee.

Several important matters are to be discussed and decided at the El Paso meeting. One of these will be a proposed amendment enlarging the territory from which members will be received.

At present, members are received only from Arizona, New Mexico, Texas west of the Pecos River, and from Northern Old Mexico. The proposed amendment would permit members to be received from Southern California, Colorado and elsewhere in Texas. The advantages and disadvantages of this change will be discussed at the forthcoming meeting.

The usual elaborate entertainment which the El Paso men always provide, will, no doubt, be forthcoming, and the program which is in process of preparation, will be the best ever yet offered by the Association.

DR. W. G. RANDELL

The tragic death of Dr. W. G. Randell, of Florence, as recorded in the daily newspapers, brought sorrow to a host of friends in his own and neighboring counties. Dr. Randell was a member of the Maricopa County Medical Society, which organization sent a delegation to Florence to attend the funeral services.

Years ago, when Dr. Randell first came to Phoenix seeking restoration to health, he made many friends among the medical men of that city, and his association with the Society, during the years of practice in Florence, maintained the friendships earlier formed. His excellent professional work in Florence, first in connection with the prison reform work initiated by Governor Hunt, and later in the County Hospital, will long be remembered.

DOCTORS AND INVESTMENTS

The reason most doctors have so little money to invest in profitable ways is because they waste so much in "wild cat" schemes. The doctor is the exemplification of the "hayseed", so dear to the heart of the bunco man. It was estimated that more than a million dollars went out of a city of about 40,000 people, in the Southwest, in the Texas oil fields, in 1920—never to return. It is known, certainly, that at least fifty thousand dollars of this came out of the pockets of the doctors of that city. This against the advice of bankers and all well informed and reputable financial representatives.

In contrast, a doctor is known to us who says that he never invests in anything except bonds of banks or those recommended by reputable banks; this doctor recently retired from practice, at the age of forty-five, with sufficient income to support himself and wife for life.

The lesson is plain. When you invest, KNOW what you are purchasing. If you wish to gamble, play the races or sit in a poker game, losing what you can afford to lose. Your money to be invested can be invested safely. If you do not know the risks in a proposed investment, inquire of a reputable investment concern, who will give you the facts.

A "HEALTHY" TENDENCY

The chief weakness of every effort made by the medical profession to bring about conditions which will improve the public health has been our inability to enlist the active co-operation and support of educated people, even when they realize that the object sought is a very desirable one. If a man has had no part in initiating a movemnt, it is difficult to interest him in it, after it is started, unless it touches him personally.

An organization recently started in England aims to overcome this difficulty by bringing into one body, corporations, associations, societies and individuals whose activities are, in any way, such as make the matter of "health" a concern to them. The corporate members include societies representing dentistry, veterinary medicine, pharmaceutical chemistry, nursing, radiography, midwifery, massage and medical gymnastics. Lay organizations representing commercial and industrial interests, voluntary health work, industrial welfare, and insured persons. Individual members include members of the House of Lords, ten medical and a number of other members of the House of Commons, mayors, county councillors, many distinguished members of the medical and allied professions, prominent business men and social workers.

The organization goes by the name of "The Federation of Medical and Allied Sciences." It issues a monthly publication called "Health." The first president is Sir Berkeley Moynihan.

There is a ripe field for an organizattion of this character, whose chief aim is the betterment of the public health, and whose activties will be directed to this end alone.

DR. ALEXANDER R. CRAIG

This familiar name will no longer appear upon the hundreds of thousands of letters received by the doctors of the country, the signature representing to them their personal touch with the American Medical Association. No longer will we see the genial, courteous and unassuming personality at the annual meetings, or in the office at Chicago. Alexander Craig's work was cut short by pneumonia a few weeks ago, and upwards of two hundred thousand physicians were shocked by his sudden death. Who can take his place,—many have asked? Some one, no doubt, will be able to take up his well-organized work and continue it, but no one can ever take the place he built for himself in the hearts of his confreres and professional friends. Many powerful personalities in the Association have made enemies, but A. R. Craig appeared to be able to make only friends. We join the entire profession of the country in mourning a great loss.

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GILA COUNTY MEDICAL SOCIETY

The County Society of Gila County was called together for a special meeting, Friday evening, September 22nd, the occasion being the opportunity of hearing Dr. B. H. Orndoff, of Chicago, in an address on "Pneumoperitoneum in Diagnosis and Therapy." Dr. Orndoff was making a trip through Arizona, as the guest of Dr. Watkins, of Phoenix, and when it was learned that he would pass through Globe, the Society was called together to avail themselves of the opportunity of hearing this address. Every member of the Society was present, except two, who were absent from the city, one who was ill and one who was compelled to remain on duty at the Miami-Inspiration dispensary. Dr. Swackhamer, of Superior, Dr. Stratton and Dr. Sawyer, of Graham County, were also present.

After a dinner at the Old Dominion Hotel, Dr. Orndoff spoke for an hour and a half on the subject mentioned, including also a description of the method of peritoneoscopy—originated by the speaker—by means of which a direct observation of the peritoneum through a lamp and lens system, is made.

EL PASO COUNTY MEDICAL SOCIETY

At a special called meeting of the El Paso County Medical Society, held July 31, 1922, convened for the purpose of discussing the appointment of a full time Health Officer for El Paso as a part of the re-organization of the City Health Department, a committee previously appointed to investigate the matter reported as follows: After free discussion with various civic bodies it had been decided to recommend that the Health and Sanitary Departments be separated and that a physician be appointed as a full time Health Officer, the selection to be made of someone fully qualified.

In accordance with a resolution embodying this recommendation and presented to the City Council, that body recently appointed Dr. John W. Brown, a member of the El Paso County Society, to the position. Dr. Brown will work under the supervision of Mr. R. E. Tarbett, U. S. Public Health Service, until the re-organization of the City Health Department is completed. Mr. Tarbett being engaged in that work at present. Dr. Brown was, previous to his appointment, acting as Assistant Health Officer and previous to his coming to El Paso, two years ago, gained considerable experience in health work in his work in the army along sanitary lines.

The El Paso County Medical Society met for the first regular meeting after the summer vacation on September 5th with 42 members and 15 visitors present.

The entire program of the evening consisted of a presentation by lecture and diagram of a properly organized city health department by Major R. E. Tarbett, U. S. P. H. S., who is now supervising the reorganization of the El Paso Health Department. He stated that in his opinion, the health department should be divided into two sections, a medical, having supervision over purely medical matters such as communicable disease control, public health nursing, school inspection, etc.; and a sanitary section, having control over all sanitary matters. He advocated a physician and a sanitary engineer in charge of these sections respectively.

By far the most freely discussed question that has come before the medical society in some time was that of pasteurization of the city milk supply below the certified grade which has been advocated by Major Tarbett and which he desired thrashed out before the society and dairymen present as visitors. At the end of a rather heated two-hour discussion, the question stood with apparently the majority of the physicians for the measure and a majority of the dairymen against it. The society took no official action.

Dr. J. W. Brown, the newly appointed full time City Health Officer, presented an outline of the proposed new free clinic.

The membership of Dr. S. D. Armistead was transferred from the Baldwin County (Alabama) Society and that of Dr. G. E. Tucker was transferred from the Perry County (Arkansas) Society.

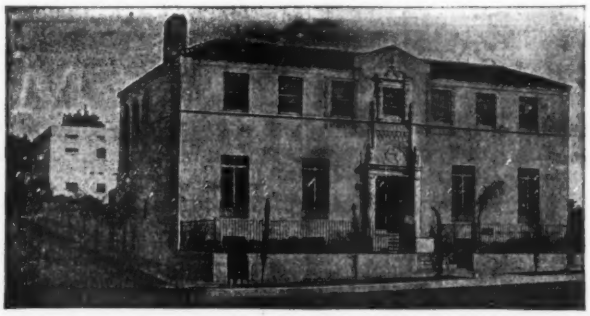
NAVAJO COUNTY: Dr. W. P. Sampson, of Winslow, was in Phoenix during the last week of September, attending the Democratic convention.

BOOK REVIEW

DISEASES OF THE DIGESTIVE ORGANS, *with special reference to their Diagnosis and Treatment*, by Charles D. Aaron, Sc., M. D., F. A. C. P. Professor of Gastroenterology and Diabetes in the Detroit College of Medicine & Surgery, Consulting gastroenterologist to the Harper Hospital. Third Edition, thoroughly revised. Illustrated with 164 engravings, 48 roentgenograms and 13 colored plates. Lea and Febiger: Philadelphia and New York, 1921. Price, cloth net $10.00.

Diseases of the Digestive Organs, Diagnosis and Treatment, third revised edition, by Aaron, is a contribution of merit. The newer methods of diagnosis and treatment are brought together in this one volume in clear and condensed form. In many cases the author has sifted the chaff from the wheat in such a way that the practitioner can profit from his experience.

The reviewer can heartily recommend this book as representing the latest and best in the science of gastro-enterology. F. D. G.



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